

CLAIMS

1. Optical fiber having a multimode core (10) comprising:
 - a first zone (11), which is homogeneous, made of a first material, which has a first refractive index (n_1);
 - a second zone (12) made of at least one second material, which has a second refractive index (n_2), which is less than the first index (n_1), that second zone (12) being peripherally arranged with respect to the first zone (11), said first and second zones being configured so that the interface between those zones defines, in a transverse plane, a contour delimiting the first zone (11) which has a star shape such that the multimode transmission characteristics of the fiber are equivalent to those of a graded-index fiber.
2. Optical fiber according to claim 1, characterized in that the star shape of said contour has N arms and has rotational symmetry of order N.
3. Optical fiber according to one of claims 1 to 2, characterized in that the star shape of said contour has at least 4 arms.
4. Optical fiber according to any one of the preceding claims, characterized in that the second zone (12) comprises a plurality of materials (21, 22, 23) having different refractive indices.
5. Optical fiber according to claim 4, characterized in that the different materials of the second zone (12) are concentric.
6. Optical fiber according to any one of the preceding claims, characterized in that it comprises, in addition, a cladding (30) made of a material of the second zone (12) of the multimode core.
7. Optical fiber according to any one of claims 1 to 6, characterized in that the material of the first zone (11) of the multimode core comprises glass.

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8. Optical fiber according to any one of claims 1 to 6, characterized in that the material of the first zone (11) of the multimode core comprises plastics material.
9. Optical fiber according to any one of the preceding claims, characterized in that the material of the second zone (12) of the multimode core comprises plastics material.
10. Optical fiber according to any one of claims 1 to 7, characterized in that the material of the second zone (12) of the multimode core comprises glass.
11. Optical fiber according to claim 7 or 10, characterized in that the glass comprises silica.
12. Optical fiber according to any one of the preceding claims, characterized in that the material of the first and/or second zone (11, 12) of the multimode core comprises a dopant element.
13. Optical fiber according to any one of the preceding claims, characterized in that it comprises, in addition, a single-mode core (20), and in that said first zone (11) is located peripherally with respect to that single-mode core (20).
14. Optical fiber according to claim 13, characterized in that the single-mode core comprises a rare-earth dopant.
15. Optical fiber according to claim 13, characterized in that the single-mode core is surrounded by a ring comprising a rare-earth dopant.
16. Optical amplifier which includes an optical fiber according to one of claims 13 to 15.
17. Laser which includes a portion of optical fiber according to one of claims 13 to 15.

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18. Local optical network which includes at least one optical fiber according to one of claims 1 to 12.

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